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ART. VI.—A FURTHER ENUMERATION OF SOME NEW ENGLAND LICHENES.* By EDWARD TUCKERMAN, JUN., LL. B., a Member of the Society. (Read before the Society, in March, 1840.)

ARTHONIA. A genus proposed by Acharius in his Lichenogr. Univ., and adopted, to some extent, by later writers. Sprengel, however, refers all the species to the genus Graphis, as arranged by him. ARTHONIA *punctiformis*, Ach. Lich. Univ., Schær.! Lich. Helvet., Muhl. Catal., Torr. Catal., Hals. Syn. View, Mass. Catal., is a common and well known form, occurring on smooth bark, and much resembling, at sight, some of the minute Verrucariæ. This seems, in some respects, to differ from Opegrapha of Acharius, but the following it seems to me much more difficult to separate from that genus. *A. radiata*, β . *astroidea*, Ach. l. c., Moug. & Nestl.! Stirp. crypt., Graphis stenocarpa, Spreng. part., Opegrapha astroidea, Ach. Meth., *O. radiata*, β . Pers.

* See Vol. II. p. 245.

occurs on hard bark in Cambridge, and seems to be noticed in several of our Catalogues. This genus will probably not remain separate from the next.

GRAPHIS curvula, Ehrh., Spreng. Syst., *Opegrapha notha*, Ach., Hals. l. c. — Rough bark, Cambridge and Watertown. Not included in the Mass. Catal. The genus *Graphis*, to which this is here referred, as arranged by Sprengel, l. c., consists of the *Opegraphæ* of Persoon and Acharius, together with the afterwards separated *Graphides* of the latter, excluding some aberrant (mostly tropical) forms, which have been arranged in new genera by Meyer. Sprengel cites Adanson as the author of this arrangement, which may, therefore, probably have the right of priority.

VERRUCARIA gemmata, Ach., Hals. l. c., Mass. Catal. — Smooth bark, common in New England.

V. nitida, Schrad., Borr. in Hook., l. c., Ach. Lichenogr., Schær.! l. c., Spreng. l. c., Muhl. l. c., *Pyrenula nitida*, Ach. Syn. (cit. Schær.), Moug. & Nestl.! l. c., *Sphæria nitida*, Weig. (cit. Hook.). — Smooth bark, very common in New England. Somewhat resembling *V. gemmata*.

V. punctiformis, Ach., Spreng. l. c., De Cand. Fl. Fr., Schær.! l. c., Hals. l. c. — Smooth bark, Cambridge.

V. epidermidis, Ach. Syn. (cit. Schær.), De Cand. l. c., Moug. & Nestl.!, Hook. Br. Fl., Hals. l. c. — Bark of *Betula papyracea*, &c., Maine. Referred to the last species by Sprengel.

V. cinerea, Pers., Hook. l. c., *V. stigmatella*, Ach., Schær.! l. c., Muhl. l. c., Torr. l. c., Hals. l. c., Port. in Mass. Catal. — Smooth bark, Cambridge.

V. enteroleuca, Spreng. l. c., *Pyrenula enteroleuca*, Spreng. in Hals. l. c., Port. in Mass. Catal., *Thelotrema cinereum*, Schwein. in Hals. l. c. — Smooth bark, very common throughout New England. This is apparently a true *Pyrenula*, a genus which is now regarded too near *Verrucaria*.

ENDOCARPON *miniatum*, Ach., Schær. l. c., Hook. l. c., — *α. umbilicatum*, Schær.! l. c., *E. miniatum*, Ach., Muhl. l. c., Hals. l. c., Mass. Catal. — On dry rocks, West Cambridge, Brookline, Waltham. Also Shelburne, Port.!, and elsewhere.

—————, *β. complicatum*, Schær.! l. c., *E. complicatum*, Ach., Hals. l. c. — Rocks near water, and within reach of the spray; Spot Pond, Medford.

—————, *γ. aquaticum*, Schær.! l. c., *E. Weberi*, Ach., Hals. l. c., Port.! l. c. — On rocks and stones under water, in brooks and ponds, West Cambridge, Medford, Plainfield, and elsewhere. The remark in Lindley, (Nat. Syst. edit. 2. p. 427,) that "no lichen is ever submersed," is at variance with the obvious habit of the var. *γ.* of this species, which certainly cannot be separated from the other *Endocarpa*.

VARIOLARIA. This genus is not allowed by Sprengel, who distributes the species between *Porina*, *Urceolaria*, and *Lecanora*. There appears to be some

confusion in the synonymy of the common forms, owing, probably, to their considerable resemblance to each other. In mentioning the following species, I have followed the arrangement of the *Methodus* of Acharius.

V. faginea, Pers. (cit. Ach.), Ach. Meth., De Cand. l. c., Hook. l. c. — Bark, less common, perhaps, than the next. This is the *V. amara* of one of the later works of Acharius, and of our authors, and is sensibly distinguished from the other species allied to it by the bitter flavor of the thallus. This is caused by the presence of oxalic acid, detected in it by Mr. Braconnot, in the proportion of 29.4 of oxalic acid, combined with 18 of lime, in 100 parts of the lichen. (Hook. l. c.)

V. discoidea, Pers. (cit. Ach.), Hook. l. c. — Trees and old rails, very common.

V. aspergilla, Ach. Lich. Univ., Hook. l. c. — Old walls, rocks, and trees.

V. velata, Ach. Syn. (cit. Hook.), Hals. l. c., Mass. Catal. — On trees, common in New England. The apothecia greatly resemble the scutellæ of a *Lecanora*, and the species (according to Hooker, l. c.) is referred to that genus by Turner and Borrer.

URCEOLARIA scruposa. Since the publication of my former paper, I have observed this plant quite common on old walls and in similar situations. Mr. Russell has sent it from Chelmsford, where he finds it abundant, on rocks. At the Cambridge station, it occurred on the ground, in a sandy soil.

U. cinerea, Ach., — forma varians. — Alpine rocks,

White Mountains. The thallus is of a rusty red, and is copiously besprinkled with the small black apothecia. The red color is probably occasioned by oxide of iron in the rock. The plant does not appear to differ in other characters of importance from *U. cinerea*. Thallus distinctly areolated, but at the same time continuous and regular.

U. cinerea, Ach., — forma varians *polygonia*. — Alpine rocks, White Mountains, with the last. Thallus rusty red, often of a fine dark red, owing, as in the last, to the presence of iron in the rock. The thallus is made up of areolæ, which are much larger than in the last, distinct, or aggregated, or sometimes confluent. The apothecia minute, very irregular, often several in a single areola. This appears to differ considerably from the last, and both from our common *U. cinerea*; but the characters of disagreement in the plants from the White Mountains are so nearly represented in European specimens, arranged as varieties of the above-cited species, that I can hardly consider our plants distinct, even as varieties. The most striking feature of these forms is, perhaps, their color; in regard to which, besides what has been said above, we may call to mind Linnæus's pleasant application of the poet, "Nimium ne crede colori;" a precept of allowed importance in botany.

LECIDEA muscorum, Schær. ! l. c., Hook. l. c., Muhl. l. c., *Patellaria muscorum*, De Cand. l. c., *P. sabuletorum*, Spreng. l. c., *Lecidea sabuletorum*, Ach., Torr. l. c., Hals. l. c., *Lichen sabuletorum*, Flörke, *L. muscorum*, L. — Decayed mosses, Cam-

bridge. Also in the lower regions of the White Mountains.

L. geographica, Hook. l. c., *Rhizocarpon geographicum*, De Cand. l. c., *Lecidea atro-virens*, var. *geographica*, Ach. Meth., *Lichen geographicus*, L., Ach. Prodr. — Alpine rocks, White Mountains, and Chin of Mansfield, Vt. An elegant species.

L. pruinosa, Ach. Meth., Hook. l. c., *L. albo-cærulescens*, Ach. Syn., Muhl. l. c., Mass. Catal., *Lichen pruinus*, Dicks. (cit. Hook.). — On rocks and boulders, not confined to limestone. Plainfield, Port.!, Waltham, Lexington, Medford, Manchester, and elsewhere in this vicinity, not uncommon. In the synonymy of this species, I have followed Hooker, l. c., but it is proper to refer to De Cand. Fl. Fr., where some additional facts may be found.

L. albo-atra, Borr. in Hook. l. c., *L. corticola*, Ach. Syn. (cit. Hook.), Muhl. l. c., Hals. l. c., *Lichen corticola*, E. Bot., *Verrucaria albo-atra*, Hoffm. (cit. Hook.). — Old elms, West Cambridge.

L. anomala, Ach. Syn., Hook. l. c., *Patellaria anomala*, Spreng. l. c., *Lecanora anomala*, Ach. Lichenogr., *Parmelia anomala*, Ach. Meth. Suppl. — Bark of *Juniperus Virginiana*, Cambridge. Apothecia remarkable for a waxy lustre, especially apparent when the plant is wet. I have some hesitation in regard to our plant, which belongs to a rather doubtful group. The *Lecanora effusa* of Muhlenberg's Catalogue probably belongs to it, as Hooker unites this species with *Lecidea anomala*. With this exception, I believe the species has not been mentioned by American authors.

L. varians, Muhl. l. c., Eaton, Man. The description given by Eaton agrees so well with one of our common forms of Lecidea, that I have little doubt our plant is the *L. varians* of the above authors. My opinion has been strengthened by an examination of labelled specimens (not, however, original) in the herbarium of Mr. Oakes. The species is somewhat remarkable, and occurs commonly on bark. Cambridge, &c.

LECANORA ventosa, Ach. — Rocks in Essex County, Oakes!. This fine species is abundant on Alpine rocks at the White Mountains, a station mentioned in my former enumeration, but it is wholly new to Massachusetts. On the Chin of Mansfield, Vt.

L. tartarea, Ach. Lichenogr., Hook. l. c., Hals. l. c., Mass. Catal., *Patellaria tartarea*, De Cand. l. c., *Verrucaria tartarea*, Hoffm., *Lichen tartareus*, L. — Rocks. Danvers, Oakes!, Brookline, Medford, &c., not uncommon. The cudbear of commerce.

PARMELIA perlata, Ach. Meth., Schær.! l. c., Moug. & Nestl.! l. c., Spreng. l. c., Hook. l. c., Hals. l. c., *Lobaria perlata*, De Cand. l. c., *Lichen perlatus*, L., Ach. Prodr. — Rocks, trees, and rails, Cambridge, Waltham, Lexington, Framingham, &c., common. Also, Chelmsford, Mr. Russell. Not as yet observed in fruit. Not in the Mass. Catalogue.

P. pulverulenta, Ach. Syn. (cit. Hook.), Schær.! l. c., Spreng. l. c., Hook. l. c., Muhl. l. c., *Imbricaria pulverulenta*, De Cand. l. c., Moug. & Nestl.! l. c., *Lobaria pulverulenta*, Hoffm. (cit. Cand.), *Lichen*

pulverulentus, Schreb. ; & *P. venusta*, Ach. Meth., cum Ic. (sec. Spreng.), nec Hals. l. c., Mass. Catal. — Bark of trees ; Cambridge, and elsewhere ; a not uncommon and handsome species. The *P. venusta*, Ach., seems, by the cited description and figure, to be too nearly allied to this species, with which it is united by Sprengel. In *P. pulverulenta*, the border of the scutellæ is described as either entire, or notched, or quite leafy.

P. speciosa, Ach. Meth., Schær. ! l. c., Spreng. l. c., Hook. l. c., Muhl. l. c. — Rocks in old woods, Waltham, Medford ; trunks of trees, not very general, Cambridge, Watertown, New Ipswich, N. H. Sprengel gives a habitat of this species in Boreal America, and Muhlenberg enumerates it in his Catalogue. It is, perhaps, especially in the finely fruited state (unknown in Great Britain), in which I have almost always found it, the most beautiful of our Parmeliæ. Hooker describes the lobes of the thallus as powdery at the extremities ; but Acharius remarks, that they are sometimes naked : the latter is the most common state in our plant. It would seem, from the description given in Eaton's Manual, of one or two species, which are named as new species in Muhlenberg's Catalogue, that our plants (and especially the saxicoline form) are very nearly allied to these ; but I am unable, at present, to ascertain this, by the necessary comparison of specimens. The saxicoline plant belongs to *P. speciosa*, unless it be found to differ sufficiently to form a new species ; but the other, which I have mentioned as growing on trees, may, I think, prove distinct. Both, however, are nearly related to *P. speciosa*.

P. ulothrix, Ach. Meth., Muhl. l. c., Hals. l. c., Mass. Catal., *Imbricaria ulothrix*, De Cand. l. c., Moug. & Nestl.!, *Lichen ulothrix*, Ach. Prodr., *L. ciliatus*, Hoffm. (cit. Ach.). — Bark of trees, Cambridge, Watertown, Medford, &c. “Ciliis scutellarum (sæpe deficientibus et facile elabentibus) imprimis a *Parmelia cycloselide* differt, cui alias simillima.” (Ach. Meth.) There is, however, in the descriptions, another character to separate these species, — the mealy warts on the margins of the lobes and elsewhere on the upper surface of *P. cycloselis*. These are very apparent in our New England form of this species, but I have observed the same on *P. ulothrix*. The latter is distinguished by a remarkable character, but it may possibly hereafter be reduced to a variety of *P. cycloselis*. In this case, the question might be entertained, whether Hoffmann’s name, above-cited, has not the right of priority.

P. Fahlunensis, Ach. Meth., Moug. & Nestl. ! l. c., Spreng. l. c., Hook. l. c., *Imbricaria Fahlunensis*, De Cand. l. c., *Squamaria Fahlunensis*, Hoffm. (cit. Cand.), *Lichen Fahlunensis*, L., Ach. Prodr. — *α. major*, Schær. ! l. c., rocks, Notch of the White Mountains. — *β. minor*, Schær. ! l. c., rocks, with the last. Somewhat resembling *P. stygia*, especially the form *β*. *P. Fahlunensis* is a larger and wider-lobed lichen, the extremities of the lobes not decurved as in *P. stygia*, the apothecia larger, and it occurs at a much less elevation. Linnæus first detected our plant about the mines of Fahlun, in Sweden.

P. diatrypa, Ach. Meth., Schær. ! l. c., Moug. &

Nestl. ! l. c., Hook. l. c., *Imbricaria diatrypa*, De Cand. l. c., *Lobaria terebrata*, Hoffm. (cit. Cand.), *Lichen pertusus*, Schrad. (cit. Ach.), *L. diatrypus*, Ach. Prodr. — Rocks, in the Notch of the White Mountains. Presents every character of the European plant. Specimens in fruit did not occur. The feature from which this species has derived its various names, *diatrypus*, *terebratus*, *pertusus*, is an uncommon and remarkable one. These words intimate not merely that the margins of the thallus are cribose, irregularly perforated, as in *Gyrophora erosa*; but that everywhere, "passim," the thallus is marked with regular holes, "laciniis parvis foraminibus pertusis." (Ach. Meth. p. 251.) This species is new to our Flora.

Belonging to the same group of *Parmeliæ* which includes *P. diatrypa*, and the species allied to it, is a lichen, which, for want of specimens to compare with, I am still unable to determine, though I have had it several years in my collection. It presents several very striking characters and is probably already described. The long, lax, linear lobes of the thallus, which are white above, and black, ragged, and spongy beneath, and inflated at the apices, together with the large scutellæ, at first goblet-shaped, and becoming, when mature, very ample, will serve to point out the plant to other observers. I have thought it agreed generally with such brief descriptions as I have seen of a remarkable species from our Northwest Coast, — *P. enteromorpha*. The species occurs abundantly on the White Mountains, in the subalpine regions. I have also observed it, more

sparingly, on the summits of the Chin of Mansfield, and the Camel's Rump, the two highest of the Green Mountains, in Vermont. A Van Diemen's Land lichen, from the herbarium of Professor Torrey, seems also to belong to this species. Should our plant prove to be distinct, it may be called *P. platycarpa*.

P. colpodes, Ach. Meth., Muhl. l. c., Hals. l. c., Spreng. l. c., Mass. Catal. — Trees, Essex Co., Oakes!, Plainfield, Porter!. Also Plymouth; a somewhat rare species.

STICTA crocata, Ach., Hals. l. c., Port. l. c. — On rocks and trees. Massachusetts, Hals., Ashfield, Port.! l. c., Plainfield, Port.! in herb. nostr., and at Waltham and Manchester. Also in the Notch of the White Mountains, and on wood from Maine. Kennebunk, Me., Mr. Russell!. The station given by Halsey was founded on specimens from Dr. Porter. This lichen may prove to be a more common species in this country, than has been supposed. I have generally met with it on shaded rocks in old woods, and but once on trees; though Dr. Porter's specimens are from the latter. The color varies from a light lead-gray on the upper surface, and a very light brown beneath, (the young plant,) to "a very dark olive-green," as Hooker describes it, above, and a rufous-brown beneath. Mr. Russell's plant is rather "glaucous-fuscous," as Acharius describes the species. The Waltham plant and that from the White Mountains are of a dark reddish-brown.

S. aurata, Ach. Meth., Port.! in Eat. Man. Bot.,

and in Mass. Catal., *Platisma crocatum*, Hoffm. (sec. Ach.), *Lichen auratus*, Smith in Ach. Meth. — On a boulder-stone in Western, Port. This rare and beautiful lichen, of which I have abundant specimens from its discoverer, is one of the tropical forms of *Sticta*. It has been found in the West Indies, by Swartz; in South America, in fruit, by Humboldt; and in St. Helena, according to Sprengel. I have a Van Diemen's Land lichen, which probably belongs to this species, from Professor Torrey's herbarium. It is also said to occur in the South of France; and there is recorded a single doubtful English station, though it would seem to be now wholly unknown in Great Britain. The Massachusetts plant did not occur in fruit, which is said by Hooker to be extremely rare.

S. scrobiculata, Ach. Syn., Spreng. l. c., Hook. l. c., Hals. l. c., Mass. Catal., *Lobaria scrobiculata*, De Cand. l. c., *Parmelia scrobiculata*, Ach. Meth., *Lichen scrobiculatus*, Scop., Ach. Prodr., & *Pulmonaria verrucosa*, Hoffm., *Lichen verrucosus*, Jacq. (fide Cand.). — Rocks in old, shady woods; Manchester, and elsewhere. Also on trees, Maine.

S. pulmonacea, Ach. — In fruit, a very luxuriant specimen; West Cambridge hills, Dr. Harris. A somewhat rare state of the plant. I have observed it on the White Mountains.

COLLEMA saturninum, Ach. Dr. Porter sends specimens from Shelburne, which are granulated on the upper surface. The plant occurs on the Waltham hills, in Cambridge, and Watertown. Mr. Russell has found it in Chelmsford.

C. tremelloides, Ach. Syn., Hook. l. c., Muhl. l. c., Torr. l. c., Hals. l. c. — Rocks, Grand Monadnock mountain, N. H.; Ragland, in Brookline, near Hammond's (or Richards's) Pond; Medford hills. Also Manchester, and elsewhere, a not uncommon species, and frequently occurring in fruit. Thallus, when moist, of a dark green, and translucent; when dry, of a light lead-color, and opaque. Besides *C. pulchellum*, I have six other New England Collemata, undetermined; two of which were received from Dr. Porter. It is remarked by Hooker, that, in drying, these plants are necessarily much altered in form, and from this, and their variable character, there is considerable difficulty in the determination of the species. (Br. Fl. in loc.).

NEPHROMA parilis, Ach. Lichenogr., Hook. l. c., *Peltigera parilis*, Spreng. l. c., *Peltidea parilis*, Ach. Meth., *Lichen parilis*, Ach. Prodr., E. Bot. t. 2360. — Rocks; in the Notch of the White Mountains, infertile. This is new to our Flora.

N. bella: "thallo membranaceo utrinque glabro, supra badio, subtus pallidiori, lobis convexis, abbreviatis, rotundatis; scutellis fuscis margine thallode integro." Spreng. *Peltigera bella*, Spreng. l. c. — Trees, sub-alpine region of the Chin of Mansfield, Vt. Thallus membranaceous, glabrous; peltæ small, exactly orbicular. I have not had the opportunity to compare our New England plant with authentic specimens of *Peltigera bella*, and the former may prove to be distinct.

N. aspera: thallo sub-coriaceo glauco-fusco, supra

demum granulato, subtus pubescenti fusco-nigro ad ambitum pallidiori, lobis erectiusculis lacero-dentato-crenatis; peltis nigro-castaneis margine lacero-fimbriato. — Rocks; Ragland, in Brookline, Manchester woods, Medford hills, and Lexington. Also Chelmsford, Mr. Russell. This appears, by the description, to be near *Peltigera* (*Nephroma*) *Helvetica*, of Sprengel, l. c., a species said by him to be found in Switzerland, but not noticed in Schærer's Swiss Lichenography.

GYROPHORA. Of the six New England species, enumerated in my former paper, two were inserted doubtfully. Further investigation has enabled me to speak with confidence in regard to both of these.

G. hirsuta, Ach. Meth., Moug. & Nestl. ! l. c., *Umbilicaria hirsuta*, Hoffm., (cit. M. & N.), De Cand. l. c., *Lichen hirsutus*, Ach. Pr. — Rocks, in the Notch of the White Mountains. Near *G. vellea*, from which it is well distinguished by the characters given by Acharius. Thallus of a whitish ash-color, somewhat pulverulent; fibres of the under surface long and very distinct; tricæ hemisphærical. The plant is much smaller than *G. vellea*, and less rigid. In my former paper, this was incorrectly considered a form of *G. vellea*. *G. spadochroa* is another species allied to *G. vellea*, which may occur, though I believe it has not yet been found in this country.

G. deusta, Ach. Meth. var. *flocculosa*, Ach., not of E. T. Enum. Lich. N. Eng., *Lecidea deusta*, Spreng. l. c., *Gyrophora ænea*, γ . Schær. ! l. c., *Umbilicaria flocculosa*, Hoffm., *Lichen flocculosus*, Wulf., *L. deus-*

tus, L. part. — Rocks ; in the Notch of the White Mountains. A smoother variety occurred in the Alpine regions of the Chin of Mansfield, Vt. In the place above-cited, I expressed a doubt whether the plants there called “*G. deusta*, Mass. Catal.”, (Acharius was not referred to,) were not rather a form of some other species. The name in question was communicated to me, with specimens, by a botanical friend ; but I do not know that it is the *G. deusta* of the Mass. Catal. The plants, I am satisfied, belong to *G. Muhlenbergii*, and are far from the true *G. deusta*, above noticed.

G. erosa, Ach., E. T. Enum. l. c. Given in the cited Enumeration with a mark of doubt. I succeeded the last year in obtaining good specimens. The species occurs, less commonly than some others, on rocks in the alpine regions of the White Mountains, and is undistinguishable in any respect from the foreign plant.

G. proboscidea, Ach. — Alpine rocks on the Chin of Mansfield, Vt. This is the highest summit in Vermont, and I did not find the species on any other of the Vermont mountains. It varies somewhat, as at the White Mountains. The var. β . *arctica* did not occur.

G. Muhlenbergii, Ach. Syn., Muhl. l. c., Hals. l. c., Hook. in Frankl. Voy. cum Ic., Lecidea Muhlenbergii, Spreng. l. c. ; & *G. deusta*, Port. ! in herb. nostr., and E. T. Enum. l. c., not of Ach. — Rocks ; Blue Hills, Milton, very abundant and fine. Essex Co. Oakes. ! Also Cambridge, Medford, Manchester, Plainfield, Plymouth, White Mountains, in the Notch, and Grand Monadnock, N. H. There is

an interesting account of this lichen in Hooker's "Appendix to Franklin's Voyage," above cited. It is regarded by Gyrophorophagi the best species for eating. I have cited Sprengel for this plant, but the reference seems to me to be hardly satisfactory; I shall endeavour to state my doubts under the next species. The *G. deusta* of my Enumeration, is, as above stated, only an immature, barren form of this species. The plant occurs in this condition, not uncommonly, on walls and rocks.

G. Muhlenbergii, Ach. β . *alpina*: *minori*, *crassiori*, *complicato*. — Alpine rocks. Summits of the White Mountains. Chin of Mansfield, and Camel's Rump Mountains, Vt. A true alpine form of the species, analogous to the var. β . of *G. proboscidea*.

G. Pennsylvanica, Ach., E. T. Enum. l. c. I am unable to reconcile Sprengel's diagnosis of this species with that of Acharius, or with the characters of our plant. There is the same difficulty in regard to *G. Muhlenbergii* as described by him, and by other authors. These species resemble each other in many points, and it is not, therefore, impossible that they may have been by some accident misplaced and confounded. The *G. Pennsylvanica* of my Enumeration is papulose on the upper surface, and with corresponding lacunæ beneath; the under surface finely and regularly granulated, like shagreen, without ridges or reticulation; the apothecia are perfect patellulæ, considerably concave, and distinctly margined. Now this would seem to be the plant of Acharius. So important did he consider the character of the perfect patellulæ, that he separated the

species from *Gyrophora* in the *Methodus*, and placed it with the *Lecideæ*. It seems also to be the *G. Pennsylvanica* of American authors. But Sprengel's plant is described as reticulate on the under surface, and possessing apothecia "plerisque abortientibus gyrosis," — true *gyromata*. My *G. Muhlenbergii* is not so distinctly papulose as the former; it is marked on the under surface with "ridges, lacerated, and joining ends," and the granulation is interrupted and often obliterated. The apothecia commonly occur in pits, or depressions of the thallus; they are flattish, heaped, and often very large; and always perfect *tricæ* or *gyromata*. But the *G. Muhlenbergii* of Sprengel is described as lacunose, and with urceolate or very concave margined *patellulæ*; a description, which, if I am not in error in these remarks, applies only to the former species.

G. hyperborea, Ach. *Meth.*, *Lecidea polymorpha*, ϵ . Spreng. l. c., *Gyrophora ænea*, γ . *hyperborea*, Schær.! l. c., *Gyromium hyperboreum*, Wahlenb. *Fl. Lapp.*, *Lichen hyperboreus*, Ach. *Prodr.*, *L. superf. subtus lacunata*, L. *Fl. Lapp.* — Alpine rocks. Rocky peaks of the White Mountains, abundant (*subtus rufa*). Summits of the Chin of Mansfield, and the Camel's Rump, Vt. (*subtus nigra*). Very different from any of our common species, but nearly allied to the next, with which Schærer has united it.

G. polyphylla, Hook. l. c., *Lecidea polyphylla*, Spreng. l. c., *G. ænea*, α . Schær.! l. c., *Gyromium polyphyllum*, Wahlenb. l. c., *Gyrophora glabra*, Ach. *Meth.*, *Lichen glaber*, Ach. *Prodr.*, *Umbilicaria polyphylla*, Hoffm., *Lichen polyphyllus* L. — Alpine

rocks. White Mountains. Acharius distinguished his Lichen glaber from the form which constituted Linnæus's Lichen polyphyllus, making the latter a variety of the former. They are not now kept separate, and Hooker has restored to the species the name given by Linnæus.

CETRARIA Islandica, Ach., E. T. Enum. l. c. I found this, the last year, in fruit, abundantly, in the alpine regions of the White Mountains. This is a very rare state of the plant in temperate countries. Our plant is smaller than the boreal form of the lichen, but it does not appear to differ in any other respect. This lichen seems to be very generally diffused, and may be regarded common. I am acquainted with the plant in the following stations: — White Mountains; Chin of Mansfield, Camel's Rump, and other of the Green Mountains, Vt.; Lynn hills; Newton hills; and Ipswich, Cambridge, and Watertown, in sandy fields. Also Hingham, Mr. Russell; New Haven, Conn., Nuttall; and Adirondack Mountains, New York, Mr. Macrae. It is also enumerated in the Catalogues of Muhlenberg, and Torrey, and in the Flora of Michaux.

C. Islandica, Ach. var. *γ. crispa*, Ach. Syn., Schær.! l. c., Alpine regions of the White Mountains; Summit of the Camel's Rump, Vt. A delicate, crisped, alpine form.

C. cucullata, Ach., E. T. Enum. l. c. I met with this finely in fruit, the last season, on the White Mountains; a state of the plant very uncommon in this latitude. The species is characterized by Acha-

rius, as having a "sanguineo-fuscous" base. His variety β . *nipharga* is said to have a purplish-violet base. Our plant is variable in size, and habit of growth, and also in the intensity of the colors. A tall form is common, of a light-green above, and with a base more or less sanguineo-fuscous, passing into violet. Another form is smaller, very cæspitose, and quite green, with a dark violet, almost black, base. Both of these occurred in fructification. I found this species also on the summits of the Chin of Mansfield, and the Camel's Rump, Vt.

C. nivalis, Ach., E. T. Enum. l. c.—Occurred on the alpine summit of the Chin of Mansfield, but not elsewhere in the Vermont Mountains.

C. juniperina, Ach. β . *pinastri*, Ach. I found this at the White Mountains on the small branches of dwarf firs, upon which it is said to grow in Britain; but the plant occurred very luxuriantly on rocks, just below the summit of the Nose of Mansfield, and also on the Camel's Rump, Vt.

Growing on the small branches of trees, a little below the subalpine region of the White Mountains, I have frequently gathered a *Cetraria* allied to the last, but of a very different aspect. This also occurred in similar places on the Chin of Mansfield, and the other highest peaks of the Green Mountains, in Vt. It may be described as follows;—thallo subcoriaceo expanso glabro virescenti, subtus dilute castaneo, margine ascendente crispo. Peltæ not seen. Should it prove to be new, which I somewhat doubt, it may be called *C. virescens*.

C. glauca, Ach. Meth., Schær. ! l. c., Hook. l. c.,

Hals. l. c., Mass. Catal. — Trees, in the northern parts of New England, not uncommon; as yet infertile.

BORRERA furfuracea, Ach., Hals. l. c., E. T. Enum. l. c. — Trunks of trees in old woods, not very uncommon. Mr. Russell has made this plant an object of some attention, and has favored me with abundant specimens from Chelmsford. I have never seen it in fruit. There occurs in the subalpine regions of the White Mountains, and I found the same on the summits of one of the Green Mountains in Vt., a smaller, more glabrous form of this species, which seems to be near the variety called β . *ceratea*. I have also from Chelmsford another small variety, remarkably "floccoso-furfuraceous" above.

CORNICULARIA. The two species of this genus alluded to in my former paper, as occurring on the White Mountains, I have this year obtained in abundance, and find, as I suspected, that they are identical with two European forms.

C. aculeata, Ach. Meth., Schær. ! l. c., Moug. & Nestl. ! l. c., De Cand. l. c., Hook. l. c., *Coralloides aculeatum*, Hoffm. (cit. Wahlenb.), *Lichen aculeatus*, Ehrh., Ach. Prodr., Wahlenb. l. c. — On the ground; alpine regions of the White Mountains. This handsome species occurred abundantly on the dry soil, formed apparently by the recent disintegration of the mica-slate, on the western descent of the summit of Mt. Pleasant, and elsewhere, in similar places. It was frequent in fruit. This (the fruit) is

well described by Hooker; but Acharius, when he published the *Methodus*, seems not to have met with it in perfection, and his description is, therefore, in this respect, incomplete; while Wahlenberg omits to notice it altogether.

C. bicolor, Ach. *Meth.*, Schær.! l. c., Moug. & Nestl.! l. c., De Cand. l. c., Hook. l. c., *Parmelia bicolor*, Spreng. l. c., *Usnea bicolor*, Hoffm. (cit. Spreng.), *Lichen bicolor*, Ehrh., Ach. *Prodr.*—Among mosses and other lichens, in the alpine regions of the White Mountains. Hooker aptly compares this plant to coarse horse-hair. The extremities of the black thallus are pale-brown, whence the name. Infertile.

SPHÆROPHORON fragile, Ach., E. T. *Enum.* l. c. I found this in fruit, abundantly, the last year, on the White Mountains. *S. coralloides* still found barren. *S. compressum* has not yet been discovered.

STEREOCAULON paschale, Ach. This seems to be now regarded a variable plant, and a disposition is apparent in late authors, to refer back to it, as the typical form of the genus, several of Acharius's species of *Stereocaulon*. This species is common with us, but I have not elsewhere seen it so fine as in the Notch of the White Mountains. A small variety, which I have from the summit of Mt. Holyoke, seems to deserve some notice. I have also collected what I suppose to be the same with this on the Medford hills. It is much dwarfed, growing in quite close masses or clusters, is considerably granulated at the extremities of the branches, and the

cephalodia are small and inconspicuous. It would seem to resemble *S. botryosum*, Ach., considered by Borrer only "a dwarfish variety of *S. paschale*," but does not so well agree with Schærerer's specimen of that plant.

S. glaucescens: thallo erecto, albescente, basi nudiusculo, ramis dichotomis, ramulis extremis granulosis; cephalodiis convexis, albo-glauciscentibus. — Rocks; in the Notch of the White Mountains. Cephalodia white-glauciscent. The color of the apothecia, in the known species of this genus, is brown, of some shade or other, and I have seen no notice of any variation from this of a kind so striking as the present. It does not appear to be accidental.

CLADONIA *subuliformis*, Hoffm. β . *taurica*, E. T. Enum. l. c. — Highest summits of the Adirondack Mountains, N. Y., Mr. Macrae. The species did not occur on any of the Green Mountains, whose elevation is considerably less than that of the above.

—————, γ . *glebulosa*, C. *vermicularis*, γ . *glebulosa*, Schær. ! l. c. — On the ground, with α ., and β ., alpine regions of the White Mountains. Well named by Schærerer *glebulosa*; i. e. cloddy.

C. gracilis, Hoffm. No less than thirteen varieties or forms of this species are given and named in the elaborate work of Schærerer. The plant mentioned in my previous paper may perhaps be regarded as the typical form of the species with us. This is tall, delicate, and of a light-green color; the cups rather small, as well as the cephalodia. This occurred the last season on the summit of the Camel's Rump, Vt.

Beside this, I have found two other forms, which, though differing considerably in some respects from the typical form of *C. gracilis*, an examination of Schærer's series of this species has led me to unite with it. The first of these may be called, — var. *grandis*: podetiis grandioribus fuscis sæpe squamosis; cephalodiis magnis nigro-fuscis. — In the alpine regions of the White Mountains; and in similar situations on the Chin of Mansfield, Vt. A conspicuous and abundant alpine lichen, quite different in appearance from the ordinary *C. gracilis*, but probably one of the various forms of that species. The other plant above mentioned, I have less difficulty in referring to one of the varieties indicated by Schærer. It appears to be the var. γ . *macroceras*, *B. elongata*, Schær., identical with *Cenomyce ecmocyna*, γ . *macroceras*, *B. elongata*, of Ach. The character is intimated by the names, and consists in the length and size of the podetia; and especially in the elongation and furcation of the branches of the scyphiform extremities. This occurred on the White Mountains, with the last, barren.

C. cornucopiæ, Hoffm., Spreng. l. c., *Scyphophorus endiviæfolius*, Hook. l. c., *Cenomyce endiviæfolia*, Ach. *Lichenogr.*, and *Syn.*, Hals. l. c., *Mass. Catal.*, *Bæomyces endiviæfolius*, Ach. *Meth.*, *Lichen endiviæfolius*, Dicks., Ach. *Prodr.* — Sands; in Cambridge and Watertown; in fruit, abundant.

C. foliacea, Hoffm., Spreng. l. c., *Scyphophorus alcicornis*, Hook. l. c., *Cladonia alcicornis*, Schær. l. c., *Cenomyce alcicornis*, Ach. *Syn.*, Muhl. l. c., Hals. l. c., *Lichen alcicornis*, Lightf., *C. fo-*

liaceus, Huds. — 'Mossy rocks, Manchester, and elsewhere. "Senescens lichen," says Acharius, "omnino mutatur. Thallus fere evanescit et proliferatione scyphorum atque podetiorum sub nova forma exsurgit; quam distinguere debui, ne confundatur cum speciebus sectionis subsequenti s. Cladoniis proprie sic dictis." In this state, the lichen has all the appearance of the subulate-branched Cladoniæ, the section which includes *C. rangiferina*, and the species allied to it. It occurs also at Manchester with the podetia very leafy, constituting the variety *phyllophora* of authors. There is a good figure of this in Vaillant (Bot. Par. t. 21, f. 3. cit. Ach.).

C. digitata, Hoffm., Schær.! l. c., Spreng. Syst., *Scyphophorus digitatus*, Hook. l. c., *Cenomyce digitata*, Ach. Syn., *Bæomyces digitatus*, Ach. Meth. — Subalpine regions of the White Mountains. The descriptions of some of the books do not well accord with this form of *C. digitata*; though an examination of Schærer's specimens has led me to refer it, without doubt, to that species. It appears to be very near the variety named *brachytes* by Acharius. Lobes of the thallus very ample, larger than in any other of our cup-bearing Cladoniæ, of a fine green above, and beneath yellow at the base, becoming white at the margins. The podetia small, in comparison with the size of the lobes of the thallus, and the scarlet cephalodia very minute. New to our Flora.

C. squamosa, Hoffm., Schær.! l. c., Spreng. l. c., *Scyphophorus sparassus*, Hook. l. c., *Cenomyce sparassa*, Ach. Syn., *Bæomyces sparassus*, Ach. Meth. — Subalpine region of the White Mountains; and at

Manchester, Essex Co., Oakes! Several varieties occur.

C. cariosa, Schær.! l. c., Spreng. l. c., *Cenomyce cariosa*, Ach. Syn. (cit. Schær.), Muhl. l. c., Torr. l. c., Hals. l. c., *Bæomyces cariosus*, Ach. Meth., *Lichen cariosus*, Ach. Prodr. — Barren soils. A small dwarfed form is common. Cambridge, &c.

PYCNOTHELIA. This genus was proposed by Dufour to include an anomalous lichen, which had been originally referred by Acharius to a section of his genus *Bæomyces*, and, when this genus was divided, to *Cenomyce*. Hoffmann and Sprengel have retained it among their *Cladoniæ*; but Hooker confirms the arrangement of Dufour. "There is something," says that learned author, "in its habit so different from the other *Cladoniæ*, that I do not well see how it can be united either with *Cladonia* or *Scyphophorus*." (Br. Fl. II. 241.)

P. Papillaria, Hook. l. c., *Cladonia Papillaria*, Hoffm., Spreng. l. c., *Cenomyce Papillaria*, Ach. Syn., *Bæomyces Papillaria*, Ach. Meth., *Lichen Papillaria*, Ehrh., Ach. Prodr. — On the ground; (barren soil, recently formed by the disintegration of the mica-slate, and composed very much of fragments of rock,) in the alpine regions of the White Mountains. This is quite small; and I observed it only on the peculiar soil above described.

P. scolecina: "thallo crustæformi, granulato-lobato; podetiis cylindræo-ventricosis, granulatis, simplicibus, albo-cinerascentibus; cephalodiis terminalibus, solitariis, rufo-fuscis." Ach. *Bæomyces scolecinus*, Ach.

Meth. cum. Ic. — Upon old rails, Cambridge, and elsewhere. Acharius placed this in the same section of his genus *Bæomyces*, which included the species now constituting *Pycnothelia*. This still seems its natural position, though it is much nearer the cup-bearing *Cladoniæ* than *P. Papillaria*, and, I have thought, may almost be said to connect the latter with the former, especially with the group which includes *C. cariosa*.

The study of our lichens cannot be satisfactorily pursued, until we have a complete synopsis of our own species. To this, however prospective it may be, these pages are offered as some contribution. That they may lead others, whose ability has been shown already, to add their larger stores, is the writer's hope.

ART. VII. — NOTICE OF MINERALS FROM NEW HOLLAND. By FRANCIS ALGER, a Member of the Society. (Read June 4th, 1840.)

FOR the minerals of which I propose to offer a brief notice on the present occasion, I am indebted to John Eldridge, Esq., of Yarmouth, Mass., who very liberally permitted me to select them from a collection purchased by him several years since, while on a visit to Calcutta, to which city they had recently been brought, as "curiosities," by a person from the coast of New Holland. Their exact locality it is not in the power of Mr. Eldridge to give me; a circumstance to be regretted, as the information